

# GANTRY-TYPE MACHINING CENTRE

ZPS MCG3022i INFINITY SERIES



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## ZPS MCG3022i

The machine construction is formed by an upper-gantry type portal whose frame consists of two sets of side walls and a base. The side walls and the rotary table base or a fixed table are mounted on adjustable wedges and are fastened to the concrete foundation by means of anchoring bolts. The cross rail moves in the longitudinal direction (X-axis) along the upper sides of the side walls. Inside the cross rail, a cross slide with a sliding ram (the so called box-in-box system) is moving in the transversal direction (Y-axis). The sliding ram is moving in the vertical direction (Z-axis) and can be fitted with various types of heads with electro-spindles, fixed electro-spindle or with a turning adapter.

The movements of all wholes in the X, Y, Z axes are ensured by means of a linear guideway with preloaded zero-backlash rolling units. Their dimensioning and location allows not only for high load of all movable wholes while maintaining high dimensional accuracy and surface finish quality of a workpiece even at interrupted cut, but also the machine long service life. The operational movements of the cross rail and the cross slide are performed by an AC regulating motor with digital control via rotating ball screw with a ball nut. The operational movements of the sliding ram are performed by four AC regulating motors with digital control. On the left as well as on the right side of the cross rail, on the upper side of the side walls, there are gear racks located. A pair of pinions is engaged into each rack. Each pinion is driven by a motor with its own planetary gearbox. Measurement of positions in X, Y, Z axes is performed directly by means of absolute linear measuring units.

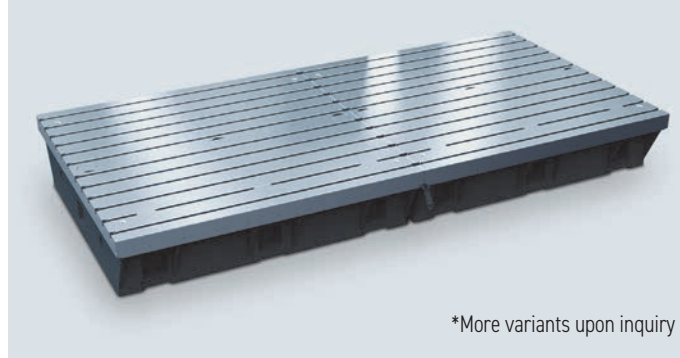
### TECHNOLOGICAL CAPABILITIES OF THE MACHINE

The ZPS MCG3022i machining centre is a high-performance machine primarily determined for machining of heavy, large-sized, spatially and technologically complicated workpieces made of steel, grey iron and light metal alloys. The centre enables milling, drilling, reaming, thread cutting as well as turning operations, such as turning of outer and inner surfaces, face turning, etc. The machine functions are directed by a CNC control system which enables the machining of the spatially complicated shapes when the tool follows the path resulting from the 3D CAD program output.



### FIXED TABLE PARAMETERS\*

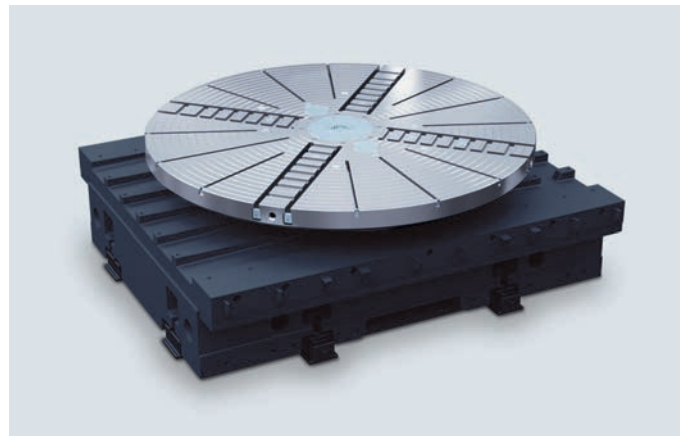
Clamping surface .....	4 000 × 2 000 mm
T-slots dimension .....	22H12
Maximal load .....	10 000 kg/m <sup>2</sup>
Clamping surface from floor .....	610 mm



\*More variants upon inquiry

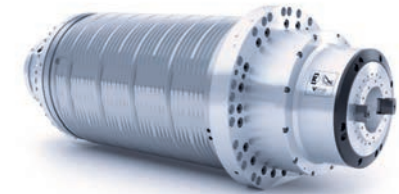
### ROTARY TABLE PARAMETERS

Clamping surface .....	∅ 2 100 mm
T-slots dimension .....	18H12 / 28H12
Table load up to 50 rpm / above 50 rpm .....	9 000 / 4 000 kg
Clamping surface from floor .....	820 mm
Rotary table speed range in spindle mode .....	2-250 rpm
Rotary table work feed in C-axis mode .....	0-50 rpm
Nominal / maximal torque .....	6 640 / 8 840 Nm
Maximal power .....	51 kW
Torque at clamping (12 MPa) .....	9 500 Nm



### SPINDLE UNITS

#### 3 - 4 AXIAL MACHINES WITHOUT HEAD CHANGE



<b>HSK-A63</b> .....	18 000 rpm	25 / 31 kW	160 / 200 Nm
<b>HSK-A100</b> .....	14 000 rpm	25 / 37 kW	160 / 236 Nm
<b>HSK-T100*</b> .....	12 000 rpm	25 / 30 kW	119 / 143 Nm
<b>HSK-T100**</b> .....	10 000 rpm	48 / 71 kW	300 / 452 Nm

\* turning clamping of 690 Nm / \*\* turning clamping of 1000 Nm

#### 5 - 6 AXIAL MACHINES WITH CYTEC M21 CHANGEABLE HEAD



1 or 2 axis head



Horizontal head



Vertical head



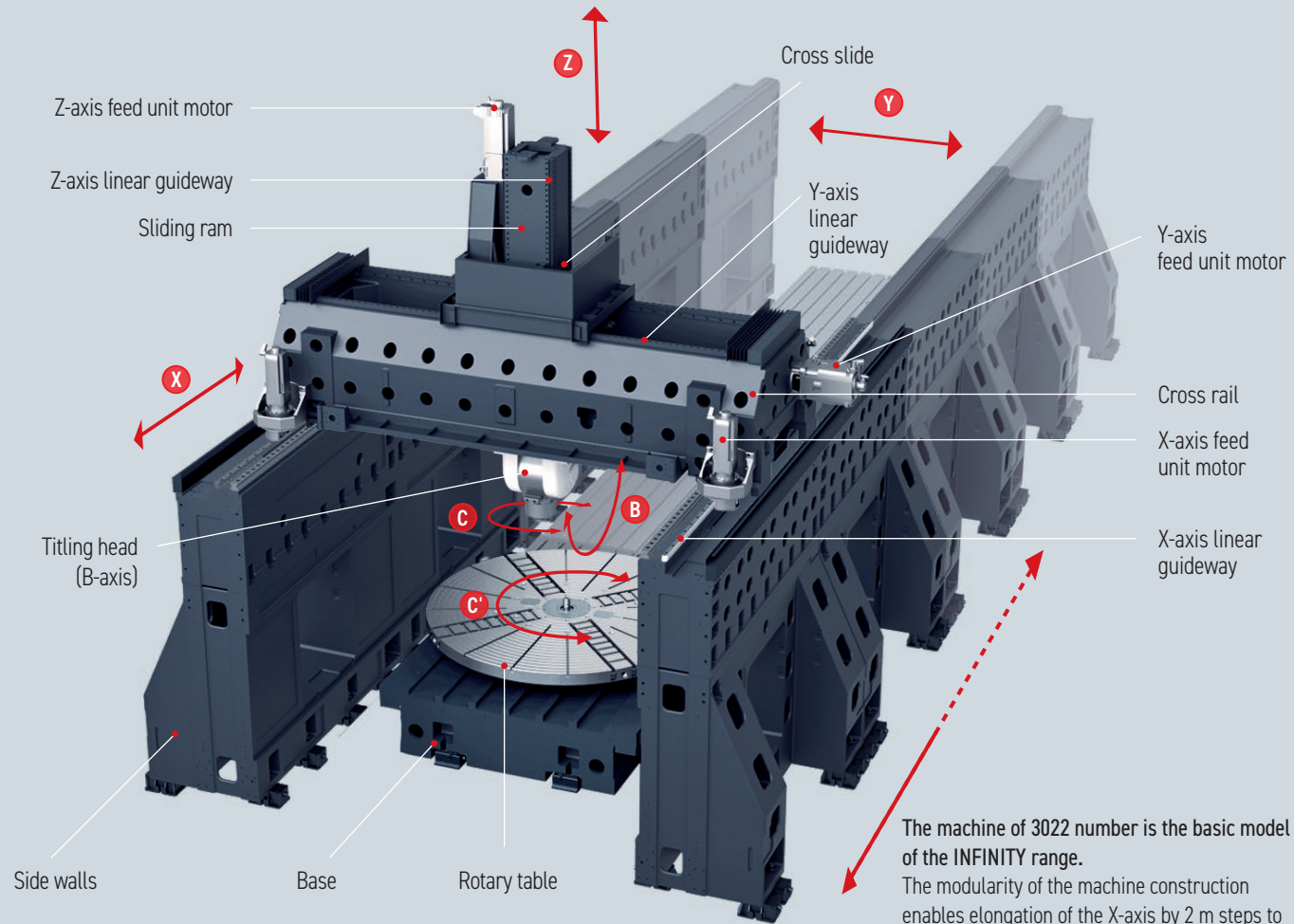
Turning head

<b>HSK-A63</b> .....	18 000 rpm	21 / 27 kW	100 / 130 Nm
<b>HSK-A100</b> .....	12 000 rpm	34 / 42 kW	160 / 200 Nm
<b>HSK-T100</b> .....	12 000 rpm	42 / 53 kW	200 / 250 Nm
<b>HSK-T100*</b> .....	10 000 rpm	27 / 31 kW	130 / 150 Nm

\* turning clamping of 2000 Nm



## MACHINE MAIN PARTS



The machine of 3022 number is the basic model of the INFINITY range. The modularity of the machine construction enables elongation of the X-axis by 2 m steps to 5022, 7022, ... ∞

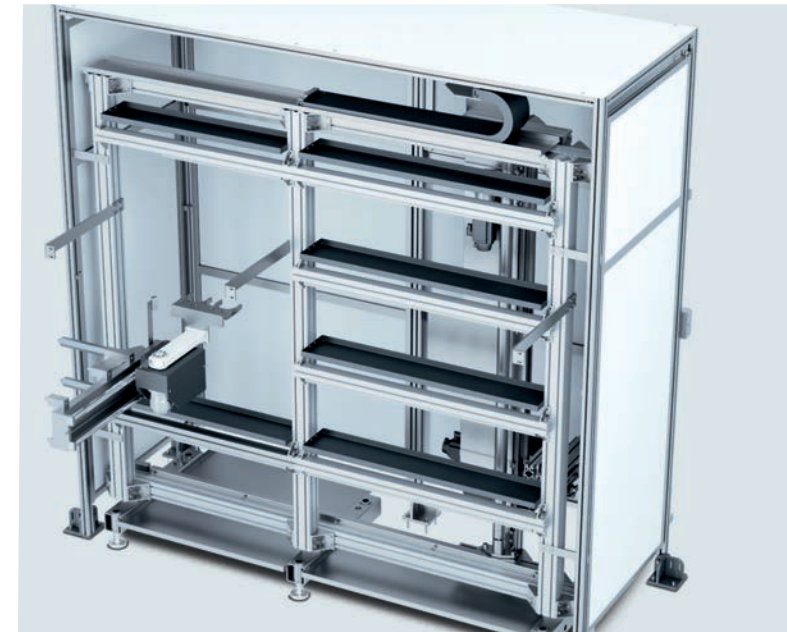
## MACHINE KINEMATICS

The operational movements of the cross rail, cross slide and the sliding ram are performed by AC regulating motor with digital control via preloaded ball nuts.

## PALLET CHANGER

No. of pockets in changer HSK63 / HSK100 (option)	50 (128) pcs
Tool max. diameter	110 mm
Tool max. diameter without adjacent tools	160 mm
Tool max. length	380 / *615 mm
Tool max. weight HSK63 / HSK100	8 / 15 kg
Tool change time	3,5 s

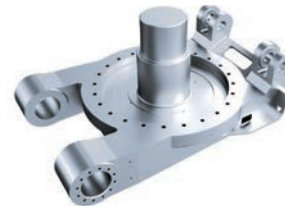
\*5 stations for tools 615 mm



## ECO FRIENDLY

The machine enclosure prevents from discharge of coolant, lubricants and machining fumes outside the workzone, thus minimizing its negative impacts on the environment. The machine design conforms to the requirements of the 2006/42/EC machinery directive, and fulfils all requirements of safety standards for the CE marking. The lubrication of movable and rotary parts of the machine (the linear axes, electrospindle) is ensured by the application of an automatic grease lubrication system which prevents from contamination of the coolant and machine parts.

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# TECHNICAL DATA

## MCG3022i MACHINE TYPE

	5-axis	3-axis
	<b>Travels</b>	<b>Travels</b>
X-axis	3 000 mm	3 000 mm
Y-axis (cross slide)	2 250 mm	2 250 mm
Z-axis (sliding ram)	1 050 mm	1 250 mm
B-axis CNC head	+/- 110 mm	
C-axis rotary table	360 mm	

### Feeds

Feedrate in X, Y, Z axes	40, 40, 50 m/min	40, 40, 50 m/min
Rapid traverse in X, Y, Z axes	40, 40, 50 m/min	40, 40, 50 m/min
Acceleration in X, Y, Z axes	3, 3, 5 m/s <sup>2</sup>	3, 3, 5 m/s <sup>2</sup>
B-axis feed, CNC head	60 m/min	
Rotary table speed range in spindle mode	250 m/min	
Rotary table work feed in C-axis mode	50 m/min	

### Dimensions

Rotary table / fixed clamping plate	∅ 2 100 mm	4 000 × 2 000 mm
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### Distances

Spindle nose to table	+120 až +1 170 mm	+530 až +1 780 mm
Clamping surface to floor	820 mm	610 mm
Spindle axis to clamping surface (B=90)	500 mm	
Max. dimension between side walls /orbital diameter	3 010 / 2 950 mm	3 010 mm
Max. dimension between covers in X-axis	5 000 mm	5 000 mm
Max. dimension of clamping surface and Z-axis upper covers	1 650 mm	1 860 mm

### Working accuracy (according to ISO 230-2)

Bidirectional positioning error (A) in X, Y, Z axes	0,009 mm	0,009 mm
Bidirectional position setting repeatability (R) X, Y, Z axes	0,004 mm	0,004 mm

### CNC head

Bidirectional positioning error (A) in B-axis/cytec head	12 arc sec
Bidirectional position repeatability (R) in B-axis/cytec head	4 arc sec
Bidirectional position repeatability (R) in C-axis/cytec head	2 arc sec

### Rotary table

Bidirectional positioning error (A) in C'-axis	6 arc sec
Bidirectional position setting repeatability (R) in C'-axis	2 arc sec

### Through-spindle cooling

Total volume of coolant	2 300 l	1 230 l
Supplied amount	23 l/min	40 l/min
Max. pressure	60 bars	70 bars
Filtering	5 µm	5 µm

### Pneumatic unit

Inlet air pressure	0,6 - 0,8 Mpa	0,6 - 0,8 Mpa
Air consumption	18 m <sup>3</sup> /hour	18 m <sup>3</sup> /hour
Operational pressure	0,55 Mpa	0,55 Mpa

### Mains requirements

Connecting voltage	3 × 400 V / 50 Hz or 3 × 480 V / 60 Hz	
Operational power	90 kVA	70 kVA
Full load current	170 A	135 A

### Weight

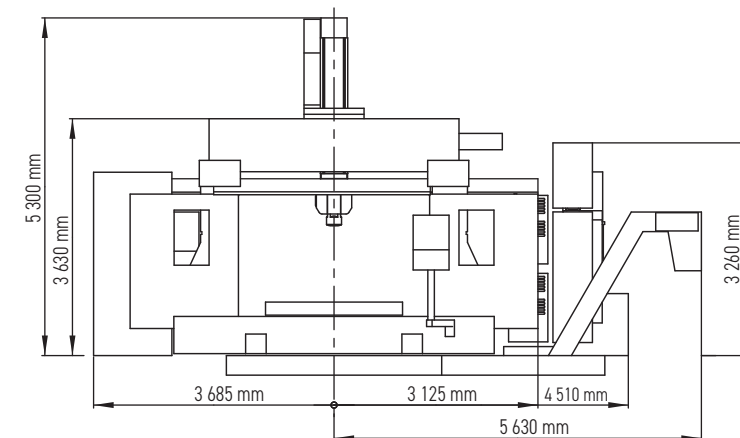
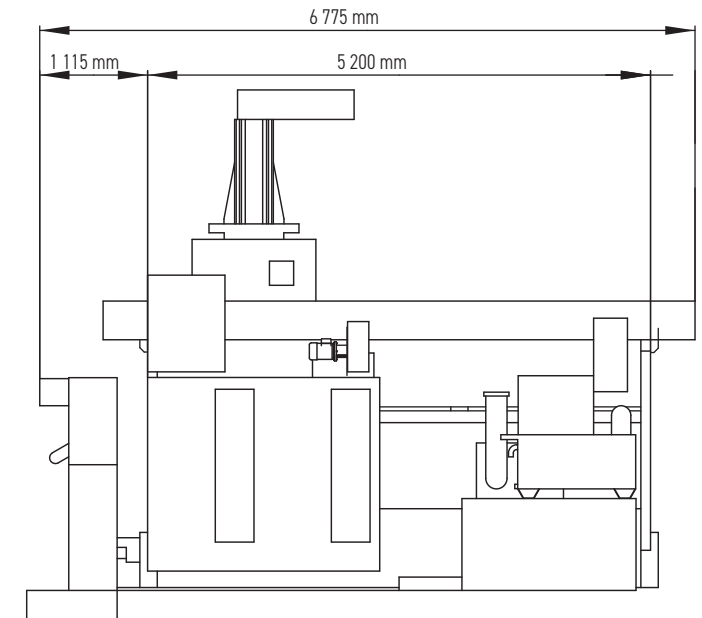
Without tool changer, chip conveyor and electrical cabinet	53 000 kg	55 000 kg
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### STANDARD EQUIPMENT

- HSK-A100 spindle unit
- Chip conveyor
- Tool cooling by air through spindle axis
- Tool cooling by coolant through spindle axis
- Completely enclosed workzone
- Automatic tool changer
- Vibrodiagnostics
- Tool outer cooling

### OPTIONAL EQUIPMENT

- 1-axial or 2-axis CNC head
- Workpiece probe
- Tool probe
- HSK-T100 spindle for turning and milling operations
- C, Y axes clamping
- Turning head
- Suction of oil mist in work zone
- Oil mist outer cooling
- Oil mist cooling through spindle axis
- Manual wash-out gun
- Remote diagnostics
- Machine hibernation



The herein stated description and specification may not correspond with the latest model of the machine. 8/2022

## CONTACT

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